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(54) Title: **FREEZE-DRYING MICROSCOPE STAGE APPARATUS AND PROCESS OF USING THE SAME**

(57) Abstract: The invention concerns methods, systems, and devices for screening arrays comprising hundreds, thousands, or hundreds of thousands of samples. These methods are useful to optimize, select, and discover compositions, or conditions for cost-effective freeze-drying of preparations and freezing of biologicals while maintaining structural integrity and/or viability. Such freeze-dried compositions are easily reformulated for treating or preventing diseases, the cause of the diseases, or the symptoms of the diseases. Moreover, optimized freezing of biological samples enables viable preservation of a wide variety of biologicals.

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